

Win-Win Approaches to Development and the Environment

Bioprospecting and Biodiversity Conservation



Center for Development Information and Evaluation

In developing countries, home of most of the world's tropical forests and a significant share of its marine habitats, biological resources are being lost in the path of economic growth. "Bioprospecting," the exploration of ecosystems to discover commercially valuable biological resources, has caught the interest of both economists and ecologists. They view it as a mutually beneficial approach to sustainable development and biodiversity conservation. By recognizing biologically rich areas as reservoirs of genetic resources with potential global benefits, bioprospectors have heightened local awareness of the value of these areas, and they have injected resources into their conservation. Still, the scope for both development and conservation benefits from bioprospecting is far from clear; it has promise—and pitfalls.

The Problem

Many of the world's forest and marine habitats on which people depend for sustenance are being destroyed, and much of the wildlife they hold is being driven to extinction under pressures of commercial agriculture, fishing, and logging, and of pollution. Countless biological resources of still unknown value are destroyed in the process of harvesting a few products of immediate commercial value from these habitats. Where areas have been officially declared as reserved for nature conservation, developing-country governments often lack the money to manage and protect them. Tropical forest and marine habitats are being destroyed because they are not fully valued for their role as reservoirs for the world's biological resources.

The Win-Win Solution

Recent evaluations of USAID environmental programs have identified a growing interest between developing-country governments and international firms in forming partnerships to preserve biologically rich areas. The aim is to explore these areas for the beneficial genetic resources they hold. (See Synthesis Report *Stemming the Loss of Biological Diversity: An Assessment of USAID Support for Protected-Area Management*, September 1995).

Governments and multinational firms have come to recognize that wildlife and its habitats, particularly in the tropical forests and waters of developing countries, are valuable reservoirs for products yet to be discovered and developed for use by man. Many of today's wonder drugs and high-yielding food crops have come from

developing countries. These countries are exploring more formal relationships with international firms to prospect for new biological materials in habitats threatened with destruction.

Bioprospecting includes more than the search for compounds that may lead to new, commercially viable wonder drugs. Nontimber forest products have also yielded promising results in the search for

- # New foods and fibers
- # Pathogens, predator insects, and botanical pesticides to control agricultural pests
- # Native plant species of commercial food crops that through cross-breeding can introduce resistance to pests or tolerance for harsh growing conditions

Marine habitats hold similar promise.

Bioprospecting can be environmentally friendly. Cooperating international firms bring with them attitudes and outlooks that can enhance local appreciation for biological resources and lead to better conserva

tion efforts by host countries. This awareness clears the way for serious efforts to reduce the loss of wildlife and its habitats.

Bioprospecting can produce significant economic and social benefits. Acting in a fashion similar to—but not so environmentally damaging as—companies exploring for minerals and oil, bioprospecting firms provide developing-

country governments with new sources of foreign exchange and revenues from the concessions they negotiate. Money from bioprospecting concessions can flow back into habitat protection and management and generate employment and income for local communities. Developing countries also participate in royalties and patents emerging from new chemical and product development.

The Role of USAID

USAID has provided funding to help support several bioprospecting undertakings in conjunction with the National Science Foundation and the National Institutes of Health. Several U.S. firms and research institutions are also taking part in bioprospecting ventures.

In **Costa Rica**, the government, along with nongovernmental organizations (NGOs) that received earlier start-up support from USAID, has teamed up with international pharmaceutical firms to examine the drug potential of tropical insects. In **Surinam** an

Agency grant supports a program to work with villagers in collecting medicinal plants.

In **Argentina, Chile, and Mexico**, the Agency supports collaboration between U.S. universities and local research institutions to collect plants for pharmaceutical and crop-protection agents. A U.S. agrochemical firm helps in the project by contributing research facilities and funds for laboratory analysis. In **Cameroon** and **Nigeria**, USAID funds are helping identify potential natural cures for cancer and AIDS.

Bioprospecting as an approach to conservation of biologically rich areas in developing countries warrants consideration as a tool for fostering environmentally sustainable development. To support bioprospecting ventures, all the players—USAID and other donors, NGOs, international enterprises and researchers, and developing-country governments—can work together to

- # Help reform government policies and build national capacity to promote, support, and negotiate bioprospecting ventures and research to make the most of their environmental and economic benefits.
- # Identify bioprospecting ventures for private funding and investment.
- # Promote participation of local communities in bioprospecting activities. Given training and guidance, individuals and groups can participate as nature guides, specimen collectors, taxonomists, and analysts. They can propagate specimens and provide lodging, transport, and other services.
- # Mobilize complementary funding from NGOs and other donors for technical and management training for local participation.
- # Support independent monitoring and certification of the performance of bioprospecting activities in USAID recipient countries.
- # Fund research into the development and environmental impact of bioprospecting ventures and policies.

have already emerged with regard to developing-country access to new food crops propagated from their own native species. Model international agreements have been drafted, but experience in their implementation is limited.

Distribution of benefits among participants within participating countries. The division of benefits within countries poses a problem, given the interest of national governments in capturing as much revenues as they can from international bioprospecting agreements. Local communities and the protected areas themselves have a justifiable claim on a share of bioprospecting benefits to compensate for alternative uses of ecosystems and to ensure sustainable ecosystem protection and management.

Autonomy and control. Citizen groups in developing countries are also concerned about losing control over use of their wildlife habitats and about not fully participating in the benefits and revenues of bioprospecting ventures with international companies. How the interests of local communities and indigenous populations can be represented in planning, conducting, and participating in the benefits of bioprospecting needs clarification.

Social and development priorities. There is a risk that some developing countries will become so seduced by the potential payoffs from bioprospecting that they will ignore the high risks and costs involved. As a result, scarce development resources can become diverted from other more tangible efforts to protect biological resources and achieve other sustainable development goals. Building expensive research labs to test for natural wonder drugs, for example, may be less cost-effective than using those resources to fund, say, a system of national parks or development of ecotourism.

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Outstanding Issues

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Regulation. Unregulated, bioprospecting could damage if not destroy some of the resources it seeks to tap. Clear and carefully developed policies must be in place, and careful monitoring and regulation are required to protect against any ecosystem damage and other abuses.

Distribution of benefits among industrial and developing countries. Developing countries fear they will be at the mercy of large multinational firms, which will patent and control the biological resources they locate. These concerns

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